PARADYNE®

Hotwire® ReachDSL™ Modem, Model 6390 with Inline Phone Filter

Installation and Operation Supplement

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Hotwire 6390 ReachDSL Modem Overview

The Hotwire® 6390 ReachDSL™ Modem is a component in the Hotwire ReachDSL System and interoperates with the Hotwire 8355 ReachDSL Card in the Hotwire 8820 GranDSLAM™ system and in the 4200 GranDSLAM system. The GranDSLAM system provides high-speed Internet or corporate LAN access over traditional twisted-pair copper telephone wiring.

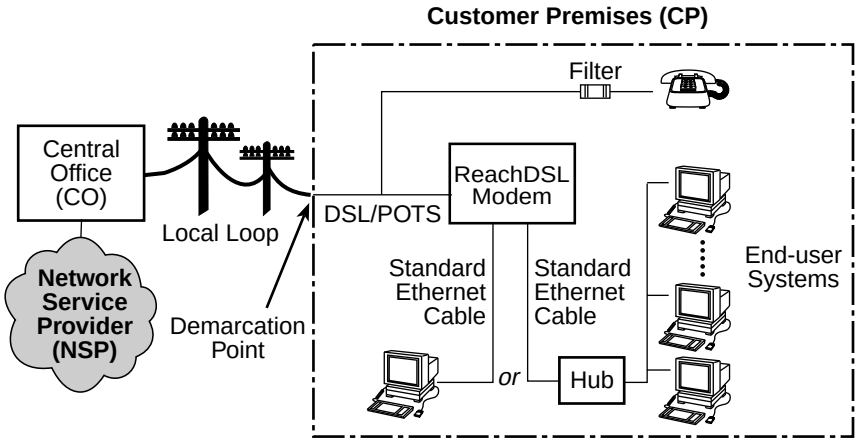
The ReachDSL technology:

- Operates over existing copper wire with existing telephone jacks.
- Uses an inline phone filter on the modem's PHONE jack.
- Includes a second line pass-through from the ReachDSL modem's LINE jack to PHONE jack to accommodate an attached 2-line telephone.
- Provides adaptive data rates to dynamically adapt and allocate bandwidth to optimize applications.

Refer to the *Hotwire ReachDSL Modem, Model 6390 with Inline Phone Filter, Installation Instructions*, Document Number 6390-A2-GN10, for instructions on how to install the Hotwire 6390 ReachDSL Modem.

Hotwire ReachDSL System

Copper pairs run from the central office (CO) to the customer premises (CP) to create the local loop. The local loop terminates on the customer premises at the demarcation point.



DSL – Digital Subscriber Lines
POTS – Plain Old Telephone Service

NOTES:

In this document:

— A telephone is used to represent any equipment that plugs into a phone jack and uses the POTS line, such as a phone, modem, or fax machine.

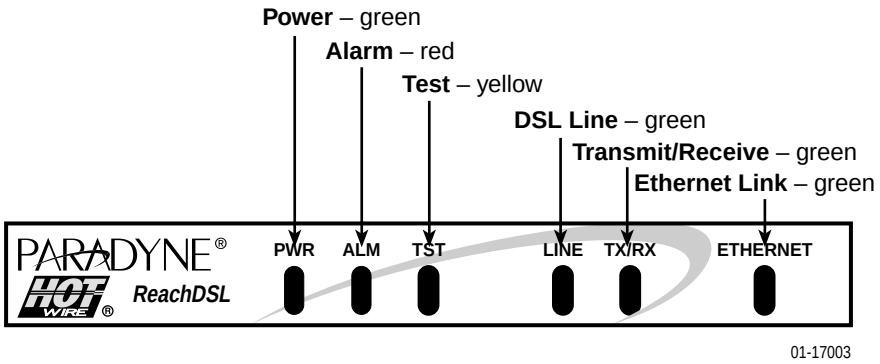
— End-user system is used to represent any PC with an Ethernet connection and ReachDSL-based service.

— RJ11 wall jack is used to represent either an RJ11 or an RJ14 wall jack. The RJ14 wall jack is used for a phone with two lines.

— Service provider is used to represent any Internet Service Provider (ISP) or remote LAN access provider.

Power-On

When power is applied, the ReachDSL modem performs self-diagnostics and the PWR LED is on. The self-diagnostics includes a power-on self-test and all of the LEDs turn on for one second.



Status LEDs

All of the LEDs turn on and off during the power-on self-test. After a successful self-test, the LEDs should appear as indicated in **BOLD** in the Condition column below.

LED	Condition	Status
PWR	**ON**	ReachDSL modem has power.
ALM	**OFF**	No active alarms.
	ON	An alarm condition exists.
TST	**OFF**	No active tests.
	ON	The TST LED is on during the power-on self-test and during a test initiated by the service provider.
LINE	**ON**	The DSL link is active and ready to transmit and receive data.
	OFF	The DSL link has not been established.
TX/RX	**ON**	Data transmission is in progress on the DSL line.
	OFF	The modem is not transmitting or receiving data.
ETHERNET	**ON**	The Ethernet connection to the Ethernet hub or PC is active.
	OFF	No Ethernet 10BaseT device is detected.

Refer to *Troubleshooting* on page 5 for LED indications requiring action.

Troubleshooting

LED Symptom	Action
All LEDs are on.	If LEDs remain on after ten minutes, the modem is not functional. Contact the service provider.
ALM LED remains on.	The power-on self-test may have failed. Unplug the unit and reapply power. If the alarm LED is still on, contact the service provider.
Ethernet LED is off.	Verify that the Ethernet cable is securely installed at both ends, and at least one PC is connected and powered on.
	Verify that the correct straight-through or crossover cable is installed. Refer to *Cables & Connectors* on page 6.
LINE LED is off.	Verify that the DSL LINE cable is securely installed on both ends. If the problem continues, contact the service provider.
	Verify that the line has dial tone. If there is no dial tone, contact the service provider.
LINE LED is on and there is no data transmission.	The DSL link has been established but there is no data transmission. Verify the Ethernet connection. If the problem persists, contact the service provider.
LINE and Ethernet LEDs are on and there is no data transmission.	The DSL and Ethernet links have been established but there is no data transmission. If the problem continues, contact the service provider.
PWR LED is off.	Check that the power cord is securely installed on both ends.
	If no LEDs are on, the power supply may be defective. Test the outlet to verify power. If the problem persists, contact the service provider.
	If other LEDs are on, the PWR LED may be burned out. Unplug the unit and reapply power; watch all LEDs during the power-on self-test to verify if the PWR LED is functioning.
TST LED is on.	A test initiated by the service provider may be active. Wait five minutes. If the TST LED does not go off, contact the service provider.

To improve data transmission throughput and minimize background noise during a telephone conversation, make sure that:

- The Hotwire 6390 ReachDSL Modem is always powered on, even when not in use, and
- A Hotwire phone filter is installed on every telephone on the same line as the Hotwire 6390 ReachDSL Modem (refer to the *Hotwire ReachDSL Modem, Model 6390 with Inline Phone Filter, Installation Instructions,* Document Number 6390-A2-GN10).

Increasing the Number of End-User Systems

A single end-user system is attached to the Hotwire 6390 ReachDSL Modem by using an Ethernet straight-through cable. To increase the number of end-user systems, connect all the PCs to an Ethernet hub and connect the modem to the hub's uplink port using a standard straight-through cable for both connections.

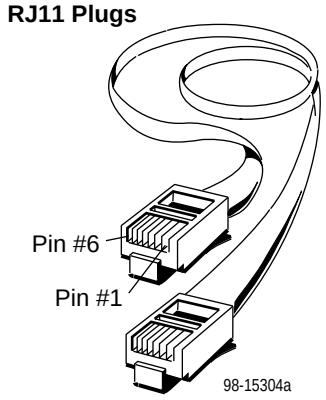
The Hotwire ReachDSL port card supports 32 hosts/subnets per DSL port and the Hotwire ReachDSL Modem supports up to 256 MAC entries.

Cables & Connectors

Standard twisted-pair CAT3 or better cables are recommended.

- The LINE and PHONE interface connectors use 6-pin, non-keyed modular plugs. RJ11 or RJ14 6-pin connectors can be used.

6-Pin RJ11 Plugs



Line & Phone Connectors

Pin #	Function
1	Not used
2	Ring 2 (optional)
3	DSL Ring 1
4	DSL Tip 1
5	Tip 2 (optional)
6	Not used

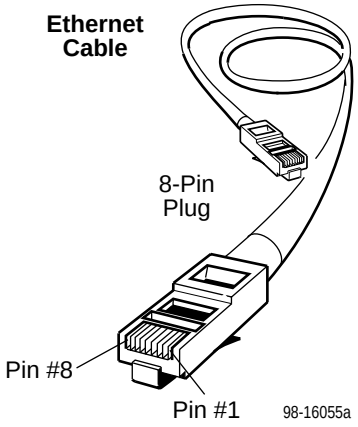
- The LINE and PHONE jack pinouts are either filtered or unfiltered for POTS.

PHONE Jack Pinouts		LINE Jack Pinouts	
Pin # 3, 4	Filtered for POTS	Pin # 3, 4	DSL and POTS
Pin # 2, 5	2nd POTS unfiltered	Pin # 2, 5	2nd line pass-through

- The Ethernet interface connector uses an 8-pin, non-keyed modular plug. To connect the DSL modem to an uplink port on an Ethernet hub or PC with an Ethernet NIC card, use the straight-through connection.

8-Pin Straight-through Connection

Pin #	Function
1	10BaseT RXD+
2	10BaseT RXD–
3	10BaseT TXD+
4 & 5	Not used
6	10BaseT TXD–
7 & 8	Not used



Optional ReachDSL Modem Wall Placement

The Hotwire 6390 ReachDSL Modem is designed for tabletop placement. The modem can also be mounted on a wall. To mount the modem, you will need:

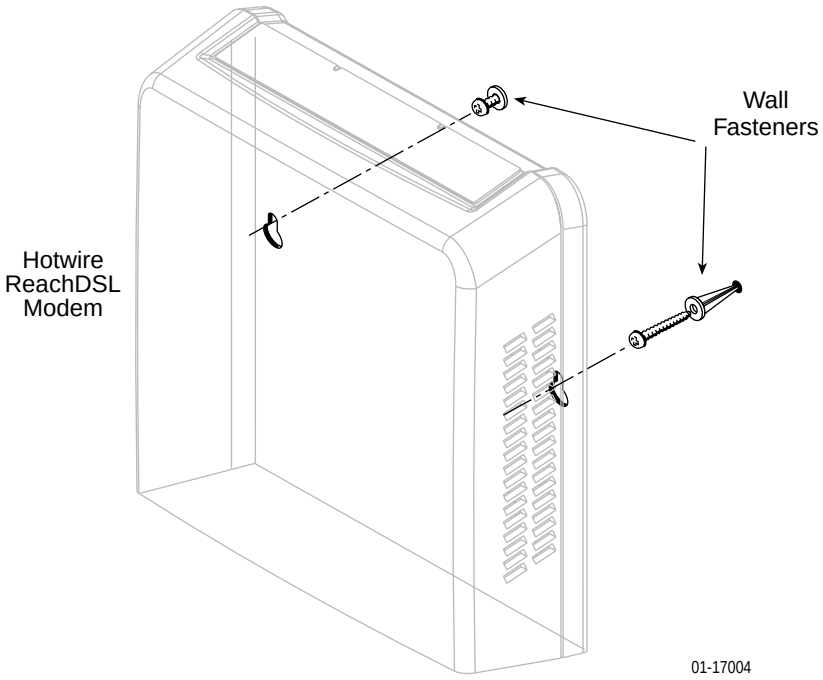
- ❑ Two slotted-head #6 self-threading screws with plastic anchors
- ❑ Drill and 3/16" drill bit for the plastic anchors
- ❑ Screwdriver

A template with the dimensions for the two screws is provided. See *ReachDSL Modem Hardware Template* on page 9.

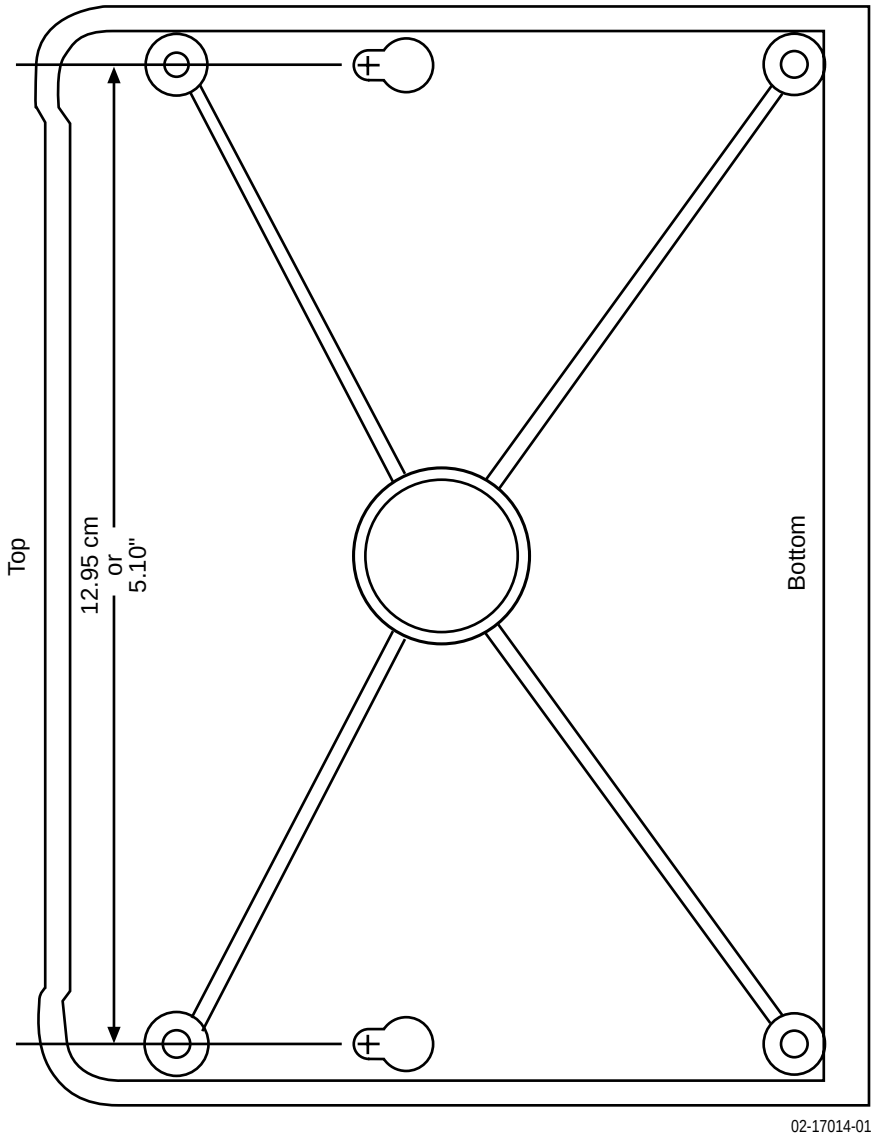
▶ Procedure

To mount the Hotwire 6390 ReachDSL Modem:

1. Use a drill to install the plastic anchors.
2. Use a screwdriver to install the screws. Do not install the screws flush with the wall. Leave enough clearance to hang the modem housing from the screws.



ReachDSL Modem Hardware Template



Hotwire 6390 ReachDSL Modem Commands

The Hotwire 6390 ReachDSL Modem provides the commands listed in Table 1, Hotwire ReachDSL 6390 Modem Commands. Use a PC connected to the Ethernet jack on the rear panel of the modem or Telnet into the modem to enter these commands.

Table 1. Hotwire ReachDSL 6390 Modem Commands (1 of 2)

Command Syntax	Argument Function	Description
help {all | <command>}	■ No argument ■ all ■ command	Displays help information. ■ Displays a list of all valid commands ■ Displays a list of all valid commands and their syntax ■ Displays syntax for command
info	None	Displays device information. ■ Model Number ■ Serial Number ■ Firmware Revision ■ Hardware Revision ■ DSP Revision
logoff	None	Terminates the Telnet session.
mgmtpvc {dhcp | <IP address> <gateway>}	■ No argument ■ dhcp or ip address – dhcp Example: mgmtpvc dhcp – IP address gateway Example: mgmtpvc 135.26.95.1 135.26.95.6	Configures or displays the management PVC. ■ Current configuration ■ Configures the management PVC: – The management PVC acquires its address using DHCP – The management PVC is configured for the specified IP address and gateway
password [<login>] <password>	■ login Example: password user user ■ password Example: password secret	Configures the modem's password(s). ■ Only available to "admin" users. Can either be "admin" (default) or "user" ■ password
ping	■ <IP address> Example: ping 135.26.12.254	Only available to "admin" users. Initiates a ping to the specified IP address and displays results. ■ An IP address must be specified
reset	None	Resets the unit.

Table 1. Hotwire ReachDSL 6390 Modem Commands (2 of 2)

Command Syntax	Argument Function	Description
upgrade <IP address> [m | e] <remote file name>		Initiates a firmware upgrade and resets the modem.
	■ IP address	■ The decimal IP address of the TFTP server
	■ m or e – m – e	■ The interface over which to perform TFTP – Management PVC interface – Ethernet interface
	■ Remote file name	■ Name of the new firmware file on the TFTP server

Downloading Hotwire 6390 ReachDSL Modem Software

The Hotwire 6390 ReachDSL Modem is capable of receiving a download of its software while continuing to pass data. The Hotwire 6390 ReachDSL Modem acts as a Trivial File Transfer Protocol (TFTP) server while receiving a download through its DSL interface.

To perform a software download, you must use a PC containing a TFTP client running on Windows 2000, Windows NT, or a UNIX platform. The download process differs, depending on whether the modem is in an 8820 GranDSLAM network with a Model 8355 Line Card or a 4200 GranDSLAM network.

See the following for procedures:

- *Building a Management PVC to the Model 8355 Line Card in an 8820 GranDSLAM Network* on page 12
- *Building a Management PVC through the 4200 GranDSLAM System* on page 14
- *Downloading Software to the ReachDSL Modem* on page 15

Building a Management PVC to the Model 8355 Line Card in an 8820 GranDSLAM Network

Before attempting to download software to the Hotwire 6390 ReachDSL modem, you must first build a management Permanent Virtual Circuit (PVC) through the DSLAM (including the SCM card). To do this, you must create VPI 0, VCI 33 on the Model 8355 line card port connected to the 6390 modem to be downloaded (see Figure 1, Network View of Hotwire 6390 ReachDSL Modem Software Download in an 8820 GranDSLAM System, and the procedure on next page).

In DHCP mode (default mode), the 6390 modem discovers the IP address via the DHCP server. However, you can also choose to configure a static IP address (Static mode) using the **mgmtpvc** command (see Table 1, Hotwire ReachDSL 6390 Modem Commands) via a PC attached to the 6390 modem's Ethernet port. The PC must have an IP address of 135.26.6.xxx with a Class C subnet mask.

For more information on the Model 8355 line card, see the *Hotwire ATM Line Cards, Models 8335, 8355, 8365, and 8385, User's Guide*, Document Number 8335-A2-GB20.

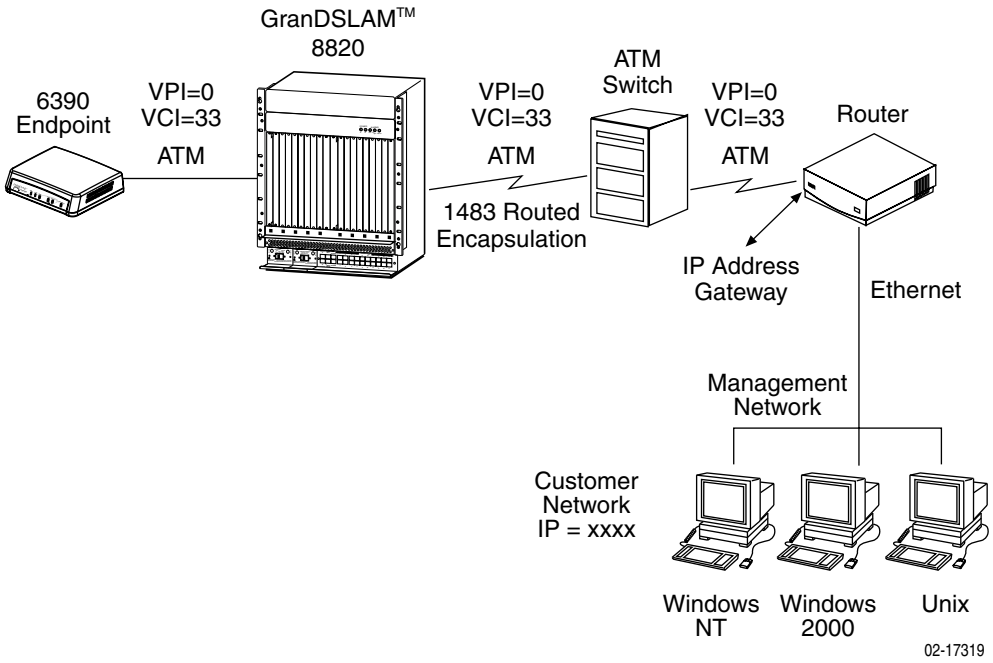


Figure 1. Network View of Hotwire 6390 ReachDSL Modem Software Download in an 8820 GranDSLAM System

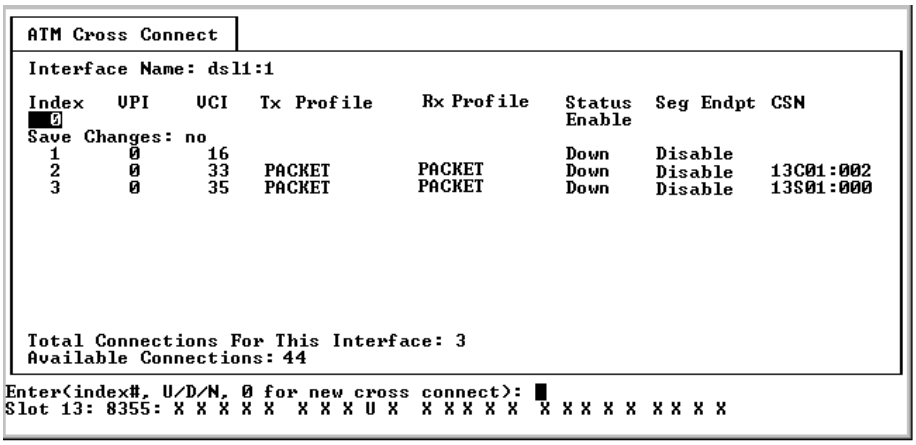
▶ Procedure

To create a PVC from the Model 8355 line card port to the Hotwire 6390 ReachDSL modem:

1. Select the ATM Cross Connect screen from Model 8355 line card. Follow this menu selection sequence:

   Configuration→*ATM Switch* →*ATM Cross Connect* (**A-E-B**)

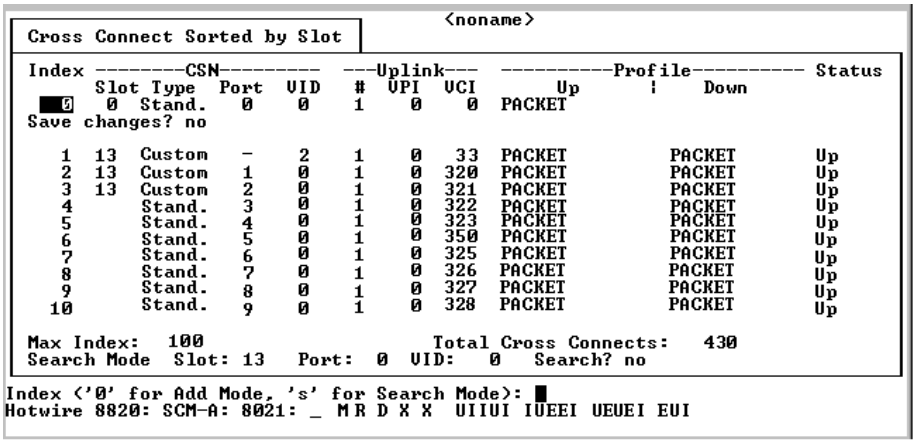
2. Create a management PVC in the cross connect table of the Model 8355 line card as shown below:


ATM Cross Connect
Interface Name: dsl1:1
Index VPI VCI Tx Profile Rx Profile Status Seg Endpt CSN
0 Enable
Save Changes: no
1 0 16 Down Disable
2 0 33 PACKET PACKET Down Disable 13C01:002
3 0 35 PACKET PACKET Down Disable 13S01:000
Total Connections For This Interface: 3
Available Connections: 44
Enter(index#, U/D/N, 0 for new cross connect):
Slot 13: 8355: X X X X X X X X U X X X X X X X X X X X X X X X

3. Select the Cross Connect Sorted by Slot screen from SCM card. Follow this menu selection sequence:

   Configuration→*ATM Switch* →*Cross Connect* →*Sorted by Slot* (**A-E-B-B**)

4. Define the custom cross connect table on the SCM card using the last three digits of the Connection Serial Number (CSN) from the Model 8355 line card Cross Connect screen. In this example, use the 002 portion of the 13C01:002 CSN.


<noname>
Cross Connect Sorted by Slot
Index CSN Uplink Profile Status
Slot Type Port VID # VPI VCI Up Down
0 Stand. 0 0 1 0 0 PACKET
Save changes? no
1 13 Custom - 2 1 0 33 PACKET PACKET Up
2 13 Custom 1 0 1 0 320 PACKET PACKET Up
3 13 Custom 2 0 1 0 321 PACKET PACKET Up
4 Stand. 3 0 1 0 322 PACKET PACKET Up
5 Stand. 4 0 1 0 323 PACKET PACKET Up
6 Stand. 5 0 1 0 350 PACKET PACKET Up
7 Stand. 6 0 1 0 325 PACKET PACKET Up
8 Stand. 7 0 1 0 326 PACKET PACKET Up
9 Stand. 8 0 1 0 327 PACKET PACKET Up
10 Stand. 9 0 1 0 328 PACKET PACKET Up
Max Index: 100 Total Cross Connects: 430
Search Mode Slot: 13 Port: 0 VID: 0 Search? no
Index ('0' for Add Mode, 's' for Search Mode):
Hotwire 8820: SCM-A: 8021: _ M R D X X UIIUI IUEEI UEUEI EUI

5. Define a management PVC path across the ATM network to reach the Model 8355 line card 0/33 management PVC using 1483 routed encapsulation.

Building a Management PVC through the 4200 GranDSLAM System

Before attempting to download software to the Hotwire 6390 ReachDSL modem, you must first build a management Permanent Virtual Circuit (PVC) through the GranDSLAM 4200. To do this, you must create VPI 0, VCI 33 on the port connected to the 6390 modem to be downloaded and a VPI, VCI (for example, 1, 33) on the uplink side (see Figure 2, Network View of Hotwire 6390 ReachDSL Modem Software Download in a 4200 GranDSLAM System, and the procedure on next page).

In DHCP mode (default mode), the 6390 modem discovers the IP address via the DHCP server. However, you can also choose to configure a static IP address (Static mode) using the **mgmtpvc** command (see Table 1, Hotwire ReachDSL 6390 Modem Commands) via a PC attached to the 6390 modem's Ethernet port. The PC must have an IP address of 135.26.6.xxx with a Class C subnet mask.

For more information on the GranDSLAM 4200 and CLI commands, see the *GranDSLAM 4200 ATM Stackable DSLAM User's Guide*, Document Number 4200-A2-GB20.

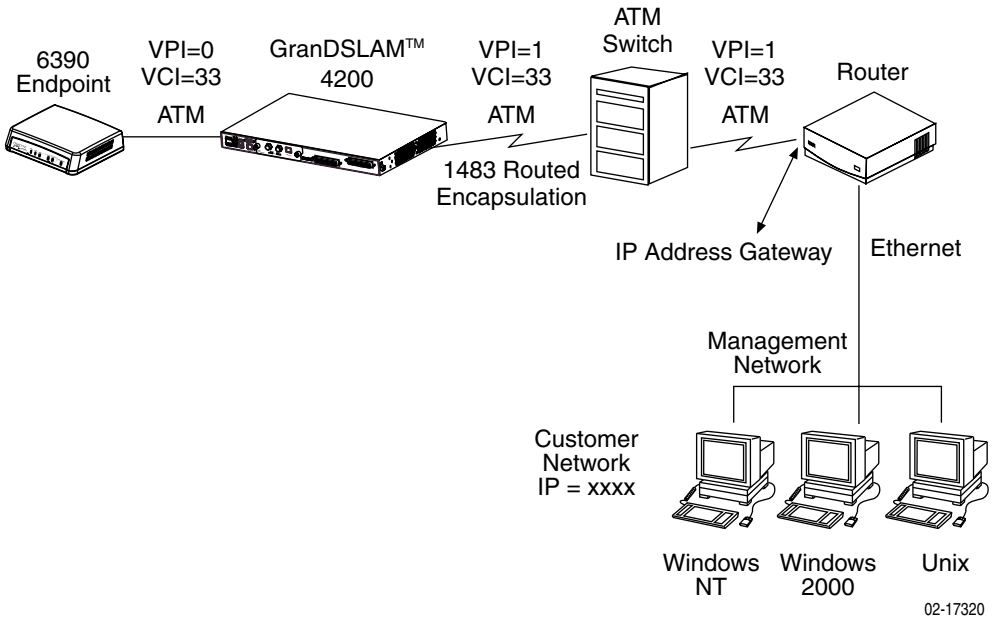


Figure 2. Network View of Hotwire 6390 ReachDSL Modem Software Download in a 4200 GranDSLAM System

▶ Procedure

To create a PVC from the GranDSLAM 4200 port to the Hotwire 6390 ReachDSL modem:

1. Log into the GranDSLAM 4200 unit using the **ACT-USER** command.

   For example, type:

   `ACT-USER:TAMPA:SUPERUSER:100::********`

2. Create a VCL to the upstream network (on the NT) with VPI=1 and VCI=33 using the **ENT-VCL** command.

   For example, type:

   `ENT-VCL:TAMPA:NTVCL-1-33:100::1,1;`

3. Create a VCL to the Hotwire 6390 ReachDSL Modem attached to Port 1 (on the LT) with VPI=0 and VCI=33 using the **ENT-VCL** command.

   For example, type:

   `ENT-VCL:TAMPA:LTVCL-1-1-1-1-0-33:100::1,1;`

4. Create a cross connection between the upstream ATM network (NT) and Port 1 (LT) using the **ENT-CRS-VC** command.

   For example, type:

   `ENT-CRS-VC:TAMPA:NTVCL-1-33,LTVCL-1-1-1-1-0-33:100:::IS;`

5. Define a management PVC path across the ATM network to reach the GranDSLAM 4200 1/33 uplink management PVC using 1483 routed encapsulation.

6. Ping the Hotwire 6390 ReachDSL Modem Management IP address assigned by the DHCP server (DHCP mode) or manually (Static mode) using the **ping** command (see Table 1, Hotwire ReachDSL 6390 Modem Commands).

Downloading Software to the ReachDSL Modem

▶ Procedure

To download new software to the Hotwire 6390 ReachDSL Modem flash memory:

1. Telnet to the 6390 modem.

2. Use the **upgrade** command to begin the software download (see Table 1, Hotwire ReachDSL 6390 Modem Commands). The modem is automatically reset after a successful download.

Technical Specifications for Hotwire 6390 ReachDSL Modem

Item	Specification*
Height x Width x Depth	3.71 cm x 14.54 cm x 11.00 cm (1.46" x 5.72" x 4.33")
Weight	0.20 kg (0.45 lb.)
Power Class 2 Transformer normal service input voltage range	 Input: 100 VAC (±10%), 50 Hz; 120 VAC (±10%), 60 Hz; or 230 VAC (±10%), 50/60 Hz Output: 5 VDC nominal, minimum 0.6A (SELV)
Approvals FCC Part 15 CISPR 22 Other Certifications	 Class B digital device Class B Refer to equipment's label for approvals on product
Physical Environment Operating temperature Storage temperature Relative humidity Shock and vibration	 0°C to 40°C (32°F to 104°F) –30°C to 70°C (–22°F to 158°F) 5% to 95% (noncondensing) Withstands normal shipping and handling
Heat Dissipation	2.35 watts at 5.0 VDC (nominal input voltage)
Interface Connectors Line Interface Ethernet Type II Frame	 RJ11 or RJ14 6-pin 10BaseT 8-pin

***** Technical Specifications subject to change without notification.

Warranty, Sales, Service, and Training Information

Contact your local sales representative, service representative, or distributor directly for any help needed. For additional information concerning warranty, sales, service, repair, installation, documentation, training, distributor locations, or Paradyne worldwide office locations, use one of the following methods:

- **Internet:** Visit the Paradyne World Wide Web site at **www.paradyne.com**. (Be sure to register your warranty at **www.paradyne.com/warranty**.)
- **Telephone:** Call our automated system to receive current information by fax or to speak with a company representative.
  - Within the U.S.A., call 1-800-870-2221
  - Outside the U.S.A., call 1-727-530-2340

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